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Abstract

BIOLOGICAL EFFECTS OF TRIATED THYMIDINE IN DROSOPHILA MELANOGASTER LARVAE

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It has been found that the sensitivity of Drosophila Melanogaster larvae exposed to X-rays or fed with tritiated thymidine varies depending on the age of larvae. The elderly larvae are almost not ensitive to small doses of X-rays or low concentrations of tritiated thymidine. On the other hand,it is known that tritiated thymidine is a precursor of DNA and that X-rays have an effect on the synthesis of DNA. In the elderly larvae tritiated thymidine, as well as X-rays, exerts few harmful effects. Therefore, our aim is to find out whether irradiation increases or decreases these effects of tritiated thymidine mentioned above.

We fed tritiated thymidine to three days old larvae and irradiated them with Cobalt 60 of 1.02 curies. We added the triated thymidine to three grams of nutrient and used a dose of 260 roentgens for irradiation.

So far, we have observed that when the larvae in the normal nutrient are irradiated, their life span did not differ from the control ones. Tritiated thymidine and irradiation, when given at the same time to the the larvae, increased their mortality rate. But, tritiated thymidine administered to the larvae, without the accompaniment of irradiation did not cause a comparable high mortality rate. So, tritiated thymidine and X-rays do impose deleterious effects when they are given to the larvae at the same time. If our future experiments confirm the stimulative (cumulative?) effect of these factors, namely tritiated thymidine and irradiation, this fact may be of practical and theoratical use.

We shall continue our experiments by changing the irradiation

dose and concentration of thymidine. In order to study the structural effect of two different doses of irradiation on the incorporation of tritiated thymidine into DNA, we shall prepare samples for autoradiographic investigations from the salivary gland giant chromosomes of the larvae undergoing the above experimentations.

The results of the experiments will be introduced and discussed in detail.